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Hermeneutics in Systems Analysis Education,

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Hermeneutics in Systems Analysis Education

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The article will discuss the use of hermeneutic methods to improve the systems analysis process. The methods of hermeneutics are aimed at doing the same thing as presently done in systems analysis, but using texts rather than procedure manuals as the source. Applying hermeneutic methods should help make clear the data context of the procedures, which should make for a better understanding of the functional relationships in the process.

Systems Analysis

The systems analysis process uses charts to develop an abstract version of the system. This allows the system development team to discuss the design issues in a more abstract way that provides room to improve the system by concentrating on the important details of the system context. In systems analysis the context of the system is the data context.

With Yourdon's method, the abstraction to data context is done by charting. The data flow diagram method is particularly good at abstracting out cultural and personality contexts, which is the goal. But it is not quite straight forward in developing data context. Note in Figure 1 that the lines that divide different data context are not immediately found from just the information on the data flow diagram. A lot of expertise and experience goes into the choice of including data bubbles into a box.

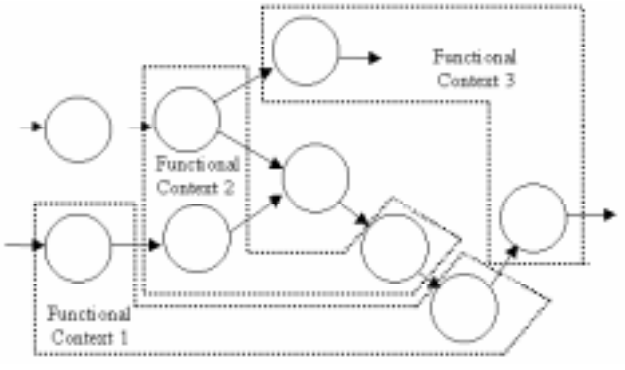

Figure 1. Yourdon's method of determining the functional context of data.

Form Criticism

The hermeneutic method uses the same base of design as Yourdon. The procedure and requirements manuals from an analysis stage describe the details of system processing in a way that can be used for design. Such descriptions then must first be broken down into workable units. This is done by using form criticism to divide the descriptions into sections. This is one of the prime methods of hermeneutics. The form determines the context of the statement and can be used to determine which statements belong together and which do not. This is an important step because it provides a good way to divide the complex subject matter into sections that are workable.

Analysis of Context

When the sections are separated by the methods of form criticism the statements that are together should have a context. In the hermeneutics method of systems analysis we look to the data context of these sections not the cultural context of normal hermeneutics. The data within a section has a context that can be used to determine the best method of modularizing. This is similar to the methods of Yourdon, but at this point is more direct.

Types of data context to look for include, incidental, temporal, statistical, administrative, functional, and structural. Incidental context means that in spite of the fact that data is together in a section of procedures, the data just does not have a context. It was just incidental that the data occurred in the section together.

A more common type of context is temporal context. This is where the data does not have a lot in common, but it needs to be used here at this time along with the other data in this section. This is slightly greater context than the incidental.

Statistical context has to do with the fact that much data is analyzed statistically, but the statistical data is not really for true business purposes. This means the data has context but it is weaker than other more business related contexts.

The next level of context is administrative. This is for the data that must be brought together for some business form, but other than having it together in such a form the data really does not have further context. The data needed for a purchase order is one example of this context. Much of the data has no further context but there is a business - administrative - context in the needs of the purchase order.

Functional data context is demonstrated by the fact that data must be together to do some business process. This could be add, subtract, multiple, divide, or compare. The data must have this functional process done and the function provides a business purpose. This data needs to be together in a module, and modules based on such processes are extremely cohesive.

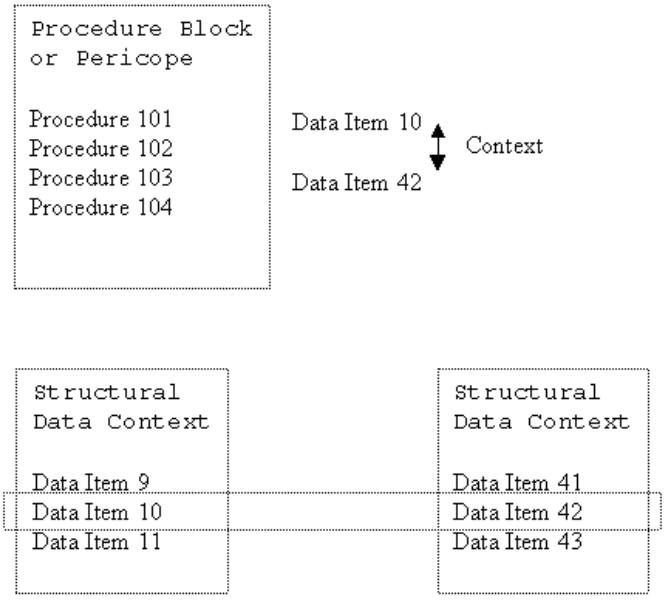

Figure 2. The hermeneutic method of determining data context.

The final form of data context comes from knowing something about the data itself. The structural context is the data of an entity. This is the crow's feet of the database. This data has a structural context and must be together in storage and is usually close at hand to the other fields of the structure in any procedure.

At this point the analyst has much the same concept of the system as with the method of data flow diagrams but has reached this point more directly.

The Method in Education

In studying the use of this process with the normal student material (textbooks and casebooks) the students have a special problem in that the textbooks are more technically oriented than normal procedure manuals. The procedure manuals are, if correctly done, closely related to the business functions of the organization. Textbooks must follow a more technically oriented direction.

We need to look at this from the designations of Habermas (1971). The three worlds of Habermas are the technical or instrumental level, the interaction or practical level, and the power or ideology level. The first is captured in our work in the program coding. The programming code is technical and instrumental.

The second is captured in the functionality of the procedures of the organization. These are both more practical and relate to the interactions of the "members" of the organization. This is the development area examined by the systems analyst.

The third is captured in user satisfaction and system use determinations. With Habermas, this third level is ultimately determined from individual commitment. Whether this commitment is a result of acceptance of the ideology of the organization or through user satisfaction, power is centered ultimately in the individual. These are the contexts, then, of the system that must be considered in a complete systems analysis.

Data Context

Thus we interpret that there is more than one kind of data context. But the primary context in an educational environment is the technical interest. We need to teach the technical side first and then the interaction or modular side of the design issues. This is because the student is very new to the technical side and does not know it in depth. The student cannot design with any technical depth from a merely practical basis, even though it is quite closely related to business interactions.

Figure 3. Formation Data Context.

The formation data context is related to the technical interests of the programmer. The data as it appears in the computer and the placement and structure of each data item is important to the student. The modular or practical interests are less obvious from this standpoint. But those modular interests must be addressed as the student works with and organizes the program for functional uses. This is at the more pragmatic interests of the program design. There is a tendency to delay functional design issues due to technical interests, but this should not be done. The problems of functional design need to be stressed from the beginning.

The third level of these design issues is the level of user interfaces. The program expresses its ideology in the interface with users. This must be covered in teaching students computer use. The ideology of the computer or of a given program is a key ingredient in the context of the system. The software is not usable unless the

interface is usable. This also needs to be stressed to the beginning programmer.

Object Oriented Emphasis

With the emphasis in system development moved towards object oriented design, much of the Yourdon technique is not applicable. The powerful abstracting ability of charting and the particularly of data flow diagrams, abstracts out much of the information we need to do object oriented design. In fact most object oriented design is some kind of hermeneutics. In most cases it is like developing characters for a novel. It seem appropriate to look back at the hermeneutic developments from the interpretive school and determine what they were doing and why. These methods were developed to make the process scientific and philosophically sound. We can also use hermeneutics to tune the design process to do the particular kind of abstracting that we need for our work. We may not want to abstract out all culture and personality.

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